New Kerosene Vaporizer Demonstrated

WITH the increasing cost of gasoline as a fuel for automobile motors, engineers have been striving for many months to produce a cheaper fuel or to bring out a carbureter or vaporizer that will enable the motor to operate on one or more of the existing heavier oils. It would seem that much has already been accomplished along this line, since the Standard Oil Company recently announced that it had brought out a new fuel called "motor spirit," which takes the place of gasoline, and in some instances gives even more power than the same quantity of gasoline.

On the other hand, great advancement has taken place in the development of apparatus to increase the power derived from existing fuels such as kerosene, alcohol, distillates and heavy oils. This was clearly and convincingly demonstrated in a recent test in New York city of the G. C. vaporizer which has been introduced into this country by an English firm.

This vaporizer takes the place of the muffler on the vehicle and resembles it in appearance. It is constructed in such a manner that the fuel, in being drawn through it, is subjected to the heat of cast iron accumulators which are kept at a high temperature by the exhaust gases. Thus the fuel is vaporized before it reaches the carbureter and is in proper condition to be mixed with outside air to form the explosive mixture.

In the test mentioned several different fuels were tried. These included gasoline, kerosene, denatured alcohol, heavy oil distillate and a refined pine wood distillate having the nature of turpentine. With the engine running at 1,500 revolutions per minute, 66 horsepower was obtained with gasoline when operating only with the carbureter. With the vaporizer switched in between the fuel supply and the carbureter, the horsepower derived from gasoline, at the same motor speed, was 67; with kerosene, 67; with the turpentine spirit, 67.3; with distillate, 63.5; and with alcohol, 61. The consumption of gasoline with the carbureter was 0.8 of a pound per horse-power per hour, while this figure was reduced to 0.7 with the introduction of the vaporizer, representing a saving of 12½ per cent.

The following table shows the exhaust gas analysis at two different speeds of the motor, first with the carbureter and then with the vaporizer:

EXHAUST GAS ANALYSIS.

	With carbureter		With vaporizer	
Speed	1,200	1,600	1,200	1,600
CO_2	9.6%	7.4%	12.0%	10.2%
CO	1.5%	3.2%	0.6%	2.8%
O	2.2%	4.3%	0.4%	0.8%

The temperature at which the fuel is mixed with air in the vaporizer varies between 550 and 750 deg. Fahr. A certain amount of air passes into the vaporizer and is raised to this temperature, although the mixture is reduced to a temperature of about 122 deg. Fahr. on being mixed with additional air in the carbureter.

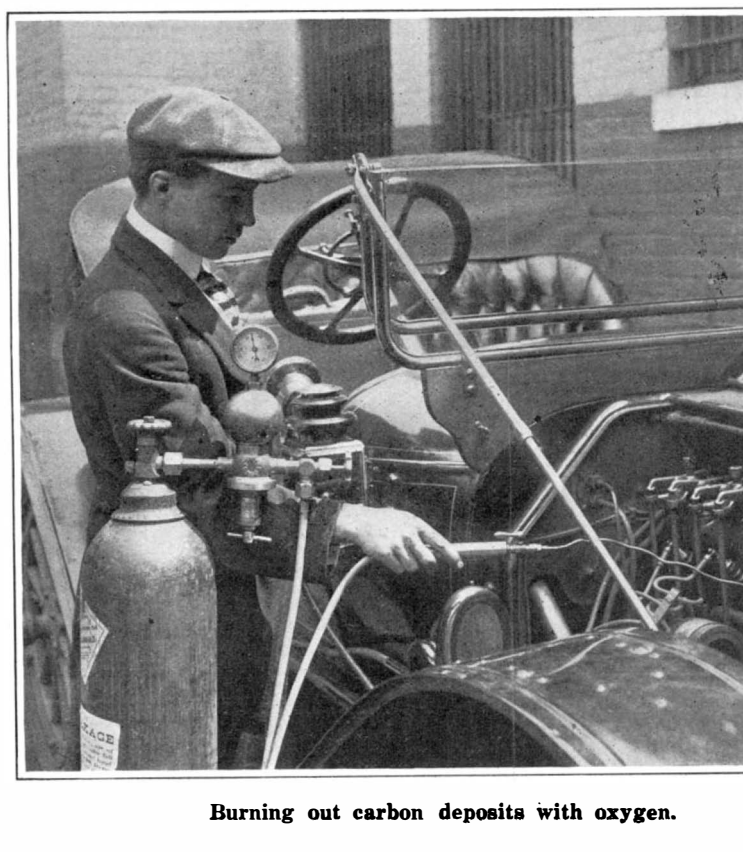
Removing Carbon Deposit with Oxygen

CARBON deposit in the cylinders and valves of internal combustion engines has always been one of the great disadvantages of this class of motive power. This is emphasized more strongly in the automobile motor than in any other type of engine on account of the frequency with which it is found necessary to take down the cylinders and remove the valves for the purpose of getting rid of the carbon deposit.

However, the motorist may now rejoice, for a new quick and easy method has been found by means of which the worst carbon deposit may be cleaned out of the engine in a few minutes without the necessity of taking down the motor or removing the valves. The device is known as the Dy-Karbo, and is shown in operation in the accompanying illustration.

The outfit consists of a tank of oxygen gas, a sensitive valve and regulator, a reservoir and gage, several feet of pressure hose and a torch. On the end of the torch is a flexible copper tube of small bore and about 18 inches long. With this outfit it is necessary only to remove a valve cap or sometimes only a spark plug, so that the small copper nozzle may be inserted in the cylinder. The tube is very soft and flexible and can be bent so as to reach all parts of the cylinder and valve where carbon is likely to be found.

When the nozzle is inserted in the spark plug hole or valve cap opening the carbon is ignited by means of a taper as soon as the gas is turned on. Since oxygen attacks carbon very readily, the deposit is burned away from the surface of the iron at a very rapid rate. As soon as all carbon has been consumed the burning automatically ceases, since the gas has no effect the instant the cylinders and valves are clean. The process affects only the carbon and does not attack the metal of the cylinders. In a cylinder where the carbon deposit is extremely heavy, only a few minutes are required to burn all of the deposit away.

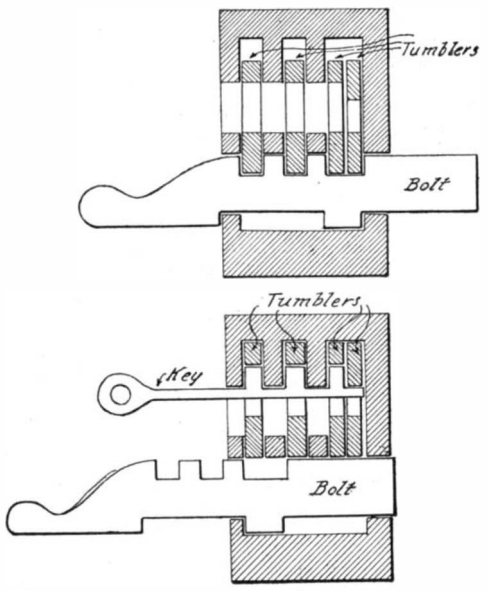


Burning out carbon deposits with oxygen.

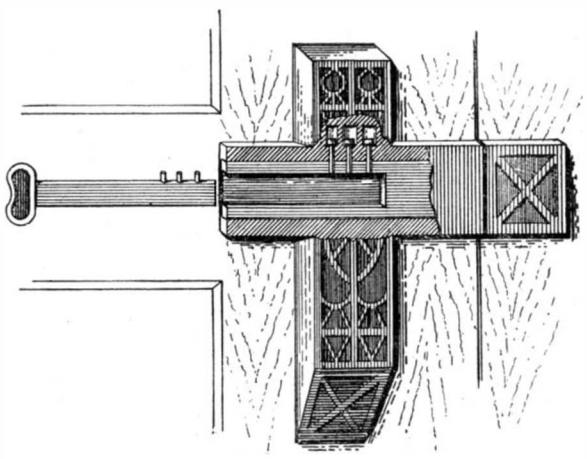
The Prototype of the Yale Lock

By Walter Schumann

NOT long since I had opportunity to discover that the principle of the Yale lock, so well known to Americans, is not the product of the fertile brain of an American inventive genius, as I had hitherto always surmised, but that it was known to ancient Romans, and was in use by them, as early as the beginning of the Christian era, if not before.



A "Yale" lock of Roman times.



Egyptian pin-type lock invented over four thousand years ago.

Far up among the Taunus Hills, about half an hour's trolley ride from the well-known German spa of Homburg, the erstwhile favorite watering place of the late King Edward VII. of England, on a commanding hilltop, is an old Roman outpost that was destroyed by the barbarians. Of late years, however, and at the instance of archæologists, the site of this outpost has been thoroughly investigated, the ruins laid bare, and on the original foundations the walls of the outworks as well as the inner buildings have been reconstructed according to Roman tradition.

Among the many articles of use and ornament discovered in the course of the excavations, all of which are exhibited in one of the reconstructed buildings, the thing that interested me most was the style of lock that had been in use by these Romans. It is built precisely on the principles of the modern Yale cylinder lock with its tumblers and serrated key. I procured a replica of one of these locks (there were a number of them, each with a different combination of tumblers) and I herewith submit a drawing of it.

One of the drawings shows the lock closed and the key withdrawn. It will be noticed that the four tumblers have dropped into the serrations of the bolt and securely hold it in place, preventing it from being slipped back. The other drawing shows the key inserted in the slot, the tumblers raised, and the bolt slipped back.

A glance is sufficient to note that the lock is built on the same principle as the modern Yale cylinder lock; the only difference being that in the Roman lock the key, after being inserted in the slot, is lifted upward in order to raise the tumblers, and that the bolt is then slipped back with the other hand; whereas, in the Yale lock the key is turned and not only lifts the tumblers, but at the same time releases the bolt.

It is perfectly evident, however, that the principle is the same in both locks, and little do we think, as we slip the little serrated key into the lock when we enter our home, that the ancient Romans unbolted the doors to their houses in practically the same way.

[A much older lock employing the "Yale" principle was described in the SCIENTIFIC AMERICAN of September 2nd, 1899. The lock, as shown in the accompanying drawing, is of the pin type and was used some 4,000 years ago in Egypt. Similar locks are still to be seen in some of the older streets of Cairo.—EDITOR.]

The Inventors' Guild and the Oldfield Bill

AT a meeting of the Inventors' Guild, held in New York city, on May 28th, resolutions were adopted in which the Oldfield bill was strongly condemned. In these resolutions an invitation is extended to the Chambers of Commerce in the principal cities of the United States and similar representative organizations to aid the Guild in its efforts to secure the appointment of a special commission, which will make a thorough and careful study of the American patent situation and then recommend to Congress such changes as may appear expedient. It will be remembered that in 1911, the Guild petitioned President Taft to have such a commission appointed. President Taft responded by sending a special message to Congress on the patent system in which the recommendations of the Guild were indorsed. Congress did absolutely nothing in the matter.

There is reason to believe that President Wilson is not indifferent to the faults of our patent system. In his "New Freedom," he comments upon the difficulty many inventors now experience in "reaping the full fruits of their ingenuity and industry," and he states that "one of the reforms waiting to be undertaken is a revision of our patent laws."

But whether or not the President will of his own initiative urge upon Congress the necessity of patent reform, there can be no doubt that if the present plan of the Inventors' Guild is carried out, Congress cannot remain indifferent. The Chambers of Commerce of our large American cities, representing as they do the industrial interests of thousands, dependent upon absolute justice and fairness in the granting and upholding of patent rights, cannot be ignored. So far as we are aware, the Cleveland Chamber of Commerce is the only body of this character which has considered the patent situation at all. Indeed, its admirable, critical study of the Oldfield bill, and its report on the patent system of the United States, antedated and probably inspired the present resolutions of the Inventors' Guild. If the example of the Cleveland Chamber of Commerce were followed, who can doubt that Congress would be induced to appoint a commission which would thoroughly study the patent system and which would result in the enactment of the kind of legislation that would meet with the approval of inventors, manufacturers and the general public.

For years business men have pointed out the need of a new Patent Office building, a simpler and more efficient system of Patent Office administration, and readier means of bringing infringers of patent to book, but Congress does nothing.

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